INGUINO-PROPERITONEAL HERNIA.[1]

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UPON August 19, 1887, at five o'clock P. M., I was called to see Thomas H., male, æt. 30 years, a horse shoer by occupation. The patient gave the following history:

He had been ruptured for several years, and had reduced the hernia himself whenever it had descended, keeping it supported by an ordinary spring truss, having a horse hair pad covered with leather. Nine days prior to my visit upon arising from bed one morning, the hernia descended He occupied half an hour in unavailing attempts to effect reduction, renewed attempts proving equally unsuccessful. Since that time there had been no evacuation of the bowels, and vomiting had made its appearance shortly afterwards, which for the past five days had been stercoraceous in character.

For several days past he had been unable to pass his urine without the aid of a catheter. He had been growing progressively worse, and expressed himself as willing to submit to any measures which would afford him relief from his distressing condition.

The general appearance of the patient was bad. He was pale, covered with cold perspiration, and presented an anxious countenance. The *temperature* was elevated to 101.4°, *pulse* 146, very irregular in rhythm and volume, but compressible and not the wiry incompressible pulse so characteristic of peritonitis. The characteristics of the pulse were essentially those, which are found present in nearly all conditions accompanied by profound adynamia.

The only pain complained of was paroxysmal and cramp-like in its character, being referred to the right side of the of the abdomen. The tongue was dry and brown, the teeth and gums covered with sordes, and finally the patient exhibited slight subsultus tendinum. *Physical examination* revealed a tumour occupying the *left* side of the scrotum, which was flat upon percussion, and from which the patient stated fluid had been taken several times. On the *right* side there was a small scrotal hernia which was irreducible by any means that I considered

[1]Read before the Brooklyn Pathological Society, Dec. 22, 1887.

wise to employ at that time. The testicle was felt to be in the scrotum situated posteriorly, and although the hernial loop had passed below it, the testis was completely descended, and was not pressed up against the external abdominal ring. The abdominal wall on the *right* side presented a swelling as large as the hand, just above Poupart's ligament and midway between the crest of the ilium and the linea alba, which was tense but elastic on palpation and resonant upon percussion. Tympany existed only in a moderate degree, and there was no general abdominal tenderness.

The bladder was somewhat distended, and upon the introduction of a catheter a quantity of urine was obtained. By the introduction of the catheter a stricture was detected a short distance behind the meatus, and another at a greater depth, but anterior to the bulbo-membranous junction. Vomiting occurred during my examination, the matters vomited emitting the characteristic fæcal odor. The patient was unable to give definite information as to the length of time the tumour in the abdominal wall had existed, but was certain he had noticed it for some time prior to the last descent of the hernia, nine days ago. A diagnosis of intestinal obstruction dependent upon some pathological condition affecting the existing hernia was readily reached, but the nature of such condition was felt to be very obscure. The profoundly adynamic condition in which the patient was found and the fact that obstruction had existed for nine days, and stercoraceous vomiting for five days, made the outlook appear anything but promising. The necessity for immediate interference having been explained, I proposed that the patient be anæsthetized, and if, after what should be deemed a judicious employment of taxis, the condition should remain unrelieved, that immediate operative measures should be instituted as offering the only chance of life, and that in consideration of the bad condition of the patient, a very small one. My proposal being accepted, an appointment was made for 8 o'clock that evening.

Operation, in which I was valuably assisted by Dr. J. B. Bogart and Dr. John J. Conway.

The patient having been anæsthetized, a trocar was introduced, the contents of the hydrocele on the left side evacuated and the bladder emptied through the catheter. Gentle taxis was then tried; by it the hernia could be apparently reduced, but upon such reduction the tumour in the abdominal wall was increased in size, and upon removal of pressure the scrotal tumour immediately reappeared. It was now regarded as probable that the abdominal tumour was a loop of intestine within the abdominal wall. Realizing the futility of attempting

reduction by the further employment of taxis, the patient was placed upon the table for operation. While recognizing the possibility of being obliged to resort to laparotomy, I deemed it best to first go through the steps of the operation constituting herniotomy. After careful antiseptic preparation of the parts, the tissues were divided down to the sac by direct linear incision. The sac was found to be adherent at the internal abdominal ring, the adhesions being readily separated, but reduction could not then be accomplished. The sac was now opened, a small quantity of dark fluid blood escaped, and the intestine came into view. The gut was distended with gas, but otherwise in excellent condition, even being free from intense congestion.

The cord and testicle were found contained in the sac with the bowel, thus demonstrating that the hernia belonged to the congenital type of scrotal hernia, due to the non-closure of the vaginal process of peritoneum at the internal abdominal ring after its descent in front of the testicle to form the tunica vaginalis. The testicle was well down in the scrotum, and not retained in the inguinal canal.

While searching for the constriction in the direction of the internal abdominal ring, my forefinger entered a cavity which conveyed the impression of being the abdominal cavity. The position of the forefinger corresponded with the location of the tumour in the abdominal wall, and it was again demonstrated that the scrotal loop could be apparently reduced but with the effect of increasing the size of this swelling.

After consultation with my colleagues I determined to extend the incision in the abdominal wall over the seat of the swelling. This incision, which was commenced at the superior pillar of the external abdominal ring, and carried upwards through the muscular structures, resulted in a laying open of a pouch situated between the transversalis fascia and the overlying muscles which was found to contain a loop of intestine from 12 to 18 inches in length. The parietal peritoneum forming the sac was very much thinned and firmly adherent to the walls of the cavity. There were numerous adhesions between the intestine and the inside of the sac, which were resistant and evidently not of recent formation. No strangulation could be discovered in this situation, the intestine presenting an excellent appearance.

After freeing the adhesions between the bowel and the inside of this sac, I followed the intestine to the internal abdominal ring, where it was again found to be adherent to the sac. The adhesions here were readily severed, as they were soft and undoubtedly of recent formation. Reduction, which was now attempted, was attended by great difficulty on account of the internal abdominal ring being narrowed by

the products of recent inflammatory action, but was finally effected after division of the ring with the hernia knife. Reduction completed, the sac was brought together by a continuous catgut suture, the remaining parts being approximated by means of deep sutures of silver wire and superficial sutures of iron dyed silk. An antiseptic dressing was applied, the patient being then returned to bed.

Ice was given to control vomiting, and ʒij of brandy with a small quantity of milk and lime water ordered q. i. h. also gr $^1/_2$ ext. opii aqu. in pill form, night and morning, with the object of keeping the bowels quiet for a few days. Stringent instructions were given to allow the patient on no account to change from the recumbent position.

At my visit on the following day, Aug. 20, there was no marked tympany and no general abdominal tenderness. The temperature was 101.4°. The condition of the heart, as indicated by the pulse, presented the most serious feature in the case, the pulse being very rapid, and possessing the same characteristics noticed before the operation. There had been no vomiting. The brandy and milk was continued, and a small quantity of digitalis ordered in addition.

On Sunday, Aug. 21, the dressing having become loosened, it was removed, a fresh one being applied with the assistance of Dr. Bogart. The appearance of the wound was all that could be desired. There were no indications of pocketing of pus and no tympany, or abdominal tenderness beyond a little soreness along the line of incision. The general condition of the patient at this visit was very encouraging. The tongue had become moist, the sordes were beginning to loosen from the teeth and gums. Temperature 100.8°. Pulse 116, stronger and more regular. The brandy and milk was continued, and my caution to the attendants regarding keeping the patient in the recumbent position renewed.

At my visit the next morning, Aug. 22, I was informed that the patient had arisen from bed, seated himself upon the vessel and obtained a large and free evacuation from the bowels. The attendants had permitted this despite my caution, although there was a bed pan in the house. Before getting back to bed he had a "sinking turn" as they expressed it. I found the pulse almost imperceptible and so rapid that it was impossible to count it. After administering stimulants hypodermically, I left the house, promising to return again that evening. I, was hastily summoned during the afternoon, and found upon my arrival that the patient had been up again, and had been attacked by syncope before he could return to bed. From this attack he only partially recovered, dying of heart failure about 5 o'clock that afternoon, hav-

ing lived about 90 hours after the operation. It is to be regretted that an autopsy could not have been obtained. I have presented the history of this case on account of the very unusual pathological conditions found.

Prof. D. Hayes Agnew[1] alludes to a condition sometimes met with, generally in connection with congenital hernia, in which diverticula are formed from the inguinal sac extending in various directions within the abdominal wall, forming the 'Interstitial" or "Intraparietal" hernia of some authors.

Prof. Ashurst[2] speaks of a form of hernia in which, owing to the obstruction of an undescended testicle, prolongations of the sac (vaginal process in the case of congenital hernia) extend in various directions within the abdominal walls forming the "Interparietal', or "Intermuscular" hernia of some writers. In 1876, Dr. R. U. Krönlein[3], who was formerly Langenbeck's assistant, published a paper in which he called attention to this condition, and proposed the term inguino-properitoneal hernia, as descriptive of that condition where a loop of intestine had been or should be found contained in a diverticulum of the inguinal peritoneal sac and situated in an unusual position within the abdominal parietes, anterior to the parietal peritoneum proper.

In 1880 Krönlein[4] published a second paper upon the same subject in which he presents 14 cases collected and reported by Streubel[5] in 1864 in which apparent reduction of an inguinal hernia was accomplished, but symptoms of strangulation persisted and death occurred, the autopsies revealing a loop of intestine contained in a diverticulum of peritoneum wholly or partly within the structures forming the abdominal parietes. To the 14 cases reported by Streubel, Krönlein adds 9 cases collected by himself where the diagnosis of the condition was also made at the autopsies. In the same paper he, in addition, reports a case of reducible inguino-properitoneal hernia where the condition was recognized, the patient recovering.

In the issue of the *Medical News* for January 22, 1887, is contained an article by Dr. Chas. W. Dulles, of Philadelphia, entitled "Hernia Inguino-properitonealis" in which he describes a case operated upon by himself. The case was one of con-

genital inguinal hernia accompanied by an undescended testicle, and presented a tumor in the abdominal wall above Poupart's ligament. Herniotomy was performed during which a properitoneal sac was found somewhere within the structures forming the abdominal wall containing a loop of intestine which was strangulated. The exact anatomical relations are not defined. Reduction was effected; symptoms of strangulation persisted, the patient dying about 90 hours after the operation.

The autopsy revealed the fact that the strangulation had not been relieved, a knuckle of intestine firmly bound together being found in the right iliac fossa, and near it the atrophied right testicle which had been carried into the abdominal cavity along with the bowel. Dr. Dulles gives a very thorough review of the literature bearing upon the subject, and makes frequent allusion to Krönlein's work. To the 24 cases reported by Krönlein, Dr. Dulles adds 9 (his own included) collected by himself, in 5 of which the diagnosis was made prior to or during the performance of the operation, all of which recovered, the condition in the 4 fatal cases being discovered at the autopsies. This makes a total of 33 cases with 27 deaths.

The *New York Medical Journal* for April 23, 1887, contains an article by Dr. Frank Hartley, of New York, whlch is entitled "Inguino-properitoneal Hernia." Dr. Hartley presents the history of a case admitted to Roosevelt Hospital on August 15, 1886, with symptoms of intestinal obstruction which had existed for a few hours. There was a history of inguinal hernia and of its descent and reduction 5 days prior to admission. On examination no intestine or omentum could be discovered in the scrotum or inguinal canal. The abdominal wall presented a tumor in the left iliac region as large as two fists, which was resistant, painful under pressure and dull upon percussion. Median laparotomy was performed, a loop of intestine being found contained in a properitoneal sac situated between the parietal peritoneum and the transversalis fascia. The patient made a good recovery.

With Dr. Hartley's case and my own the total number of cases that have apparently been placed upon record since 1749 is 35, with 28 deaths. Dr. J. B. Bogart of this city has at

present a case under observation which is in all probability a reducible properitoneal hernia. The subject is a child, having a congenital hernia accompanied by an undescended testicle. As a result of the obstruction formed by the undescended testicle the protrusion has dissected upwards and outwards, between the planes of the antero-lateral abdominal parietes towards the crest of the ilium. The future developments in the case will be watched with interest.

The mechanism involved in the production of properitoneal hernia forms an interesting study.

Bar[6] and Richter[7] explain it as a congenital anomaly of the parietal peritoneum.

Streubel offers the following explanation: The neck of the sac becoming contracted, pressure upon the contents drives the firm cicatrix of the neck, up and presses out a lateral diverticulum between the structures of the abdominal parietes above the peritoneum. He states that this result may be favored by the action of an imperfect truss, or caused solely by the obstruction of an undescended testicle. To this view Krönlein adheres in most essential particulars.

It can readily be appreciated that the mechanical conditions present in hernia of the congenital type peculiarly favor the production of pro-peritoneal hernia.

It would not be difficult to regard the existence of a properitoneal sac situated between the parietal peritoneum and the transversalis fascia, as a congenital anomaly in the distribution of the parietal peritoneum. Although I have made careful inquiry from those in positions offering ample facilities for the observance of such an anomaly during the dissection of the cadaver, I have been unable to discover that such an anomaly has ever been found, without bearing an intimate relation to an existing hernia.

It would be exceedingly difficult to explain the existence of a properitoneal sac in any position anterior to the internal abdominal ring, otherwise than as an acquired condition.

In the case that I have presented the condition was that of a congenital hernia without the usual accompaniment of an undescended testicle. It would seem that the patient's occupation, that of horse shoer, presented peculiarly favorable cir-

sumstances for the production of a properitoneal sac. The explanation of the pathological condition that has suggested itself to my mind is as follows.

First.—(*a*). That at some time in the past, while employing more violent means than usual to effect reduction, instead of passing the bowel through the int. abdominal ring a passage was effected by traumatism between the transversalis fascia and the overlying muscles, the truss applied and the bowel retained in this position—or

(*b*). The neck of the sac having become contracted, as suggested by Streubel, the action of the truss in the pursuance of the patient's occupation resulted in the sending off of a diverticulum from the inguinal sac, thus forming a properitoneal pouch into which the loop of intestine was at some time reduced and retained in this position by the application of the truss.

Second.—That upon the next descent of the hernia, another portion of intestine having descended from the abdominal cavity, reduction was effected into the same position, the loop of the intestine in the properitoneal sac being thus increased in size. Following this, inflammatory action of a low grade occurred, resulting in the adhesion of the bowel to the inside of the sac, and securing its permanent retention within the structures forming the abdominal parietes.

Third.—That nine days prior to the operation, as a result of the employment of violent taxis, inflammatory action was excited in the neighborhood of the internal abdominal ring, the products of such action securing the bowel at this point.

Fourth.—The narrowlng of the internal abdominal ring by products of recent inflammatory action effected a diminution in the calibre of the intestine, thus forming obstruction to the passage of the contents of the bowels, and favoring impaction above the seat of hernia.

It would seem that the condition was that of an incarcerated, obstructed, inguino-properitoneal hernia.

This explanation is substantiated by the following facts:

1. The existence of an abdominal tumor for a comparatively long time prior to the occurrence of symptoms indicating intestinal obstruction.

2. The presence of organized adhesions between the loop of

intestine and the inside of the properitoneal sac, demonstrating that they were not of recent formation.

3. The absence of constriction at any point other than at the internal abdominal ring with the evidence of recent inflammatory action in that situation.

4. The favorable mechanical conditions offered for the production of a properitoneal hernia by the action of the truss in the pursuance of the patient's occupation, that of horse-shoeing.

5. The frequent employment of violent taxis.

The above explanation is further substantiated by the statement of the patient to the effect that reduction was often accomplished with great difficulty and accompanied by severe pain. During my first examination he begged to be allowed to attempt reduction once more. From the violent manner in which he employed taxis I could almost credit him with ability to place the intestine in any part of the abdominal wall at will, and am only surprised that inflammatory action of a higher grade was not excited.

The diagnosis of this condition will be very obscure, and must always remain to a greater or less extent a matter for conjecture. It is of vital importance that the true pathological condition be recognized during the performance of an operation, and appropriate measures be exhibited for its relief. This point is emphasized by a case operated upon by Langenbeck in 1875, and reported by Krönlein in 1876. The hernial tumor occupied the right groin. Reduction was effected, but symptoms of strangulation persisting, reduction *en masse* was suspected by Langenbeck with internal strangulation. The next day he cut down upon the tumor, resected a portion of gangernous intestiné, sewed up the wound and replaced the gut, as he supposed, in the abdominal cavity. Death occurred the following day, the autopsy revealing the fact that the operation had only opened a small sac in the inguinal canal, a properitoneal sac containing a loop of intestine being found between the transversalis fascia and parietal peritoneum.

The prognosis in these cases when the pathological anomaly is recognized before or during the performance of the operation, appropriate measures being taken for its relief, and the

physical condition of the patient favorable, should be that of recovery.

In cases similar to that described by Dr. Hartley in which the scrotum and inguinal canal are free from hernial protrusion and the properitoneal sac is situated between the transversalis fascia and the oparietal peritoneum, median laparotomy would afford the most convenient access to the parts, but, on the other hand, when the properitoneal sac is situated in any position anterior to the internal abdominal ring, an additional loop being contained in the scrotum or inguinal canal, as instanced in my own case, the exigencies could only be fairly met by a lateral operation.

[1]Agnew's Surgery, Volume I, page 471.

[2]Ashhurst's Surgery, 3d edition, page 815.

[3]Herniologische Beobachtungen aus der *v. Langenbeck's Archiv.*, Bd. XIX, pp. 408–425, 1876, I, Hernia inguino-properitonealis incarcerata.

[4]Weitere Mittheilungen über Hernia inguino-properitonealis. *Langenbeck's Archiv.*, Bd. XXV, 1880, pp. 548–579.

[5]Streubel C. W., Ueber die Schein-reductionen bei Hernien, etc. Verhandlungen der Med. Gesellschaft der Aerzte in Wien., 1864, No. 15.

[6]Bär. *Prager Vierteljahrsschrift*, Bd, IV, 1866.

[7]Richter E , Studien zur Lehre von den Unterleibsbrüchen. Leipzig und Heidelberg, 1869.